SAFETY DATA SHEET

Dimethylamine Anhydrous (DMA)

Version	Revision Date:	SDS Number:	Date of last issue: 08/04/2022
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PRD		SDSUS / Z8 / 0001	

SECTION 1. IDENTIFICATION

Product name : Dimethylamine Anhydrous (DMA)

Product code : 51010-00, P5101010, P5101003, P5101004

Manufacturer or supplier's details

Company name of supplier : Eastman Chemical Company

Address : 200 South Wilcox Drive
Kingsport TN 37660-5280

Telephone : (423) 229-2000

Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321

Recommended use of the chemical and restrictions on use

Recommended use : Chemical intermediate

Restrictions on use : None known.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable gases : Category 1

Gases under pressure : Compressed gas

Acute toxicity (Inhalation) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.

Precautionary Statements :

Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P261 Avoid breathing gas.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

Chemical name	CAS-No.	Concentration (% w/w)
dimethylamine anhydrous (DMA)	124-40-3	>= 90 - <= 100

Eastman is committed to the safety, health and environment of our employees, our customers, and the communities we operate within. As part of this commitment, Eastman's Safety Data Sheets (SDS) are prepared in accordance with all applicable national and local regulations. The compositions of our documents reflect these requirements which include, but are not limited to, requirements under the Globally Harmonized System of Classification and Labeling (GHS). These compositions commonly involve the use of ranges versus specific analytical values. If you require a composition that is more specific , please refer to the Certificate of Analysis, sales specification, or contact your Customer Service Representative.

SECTION 4. FIRST AID MEASURES

If inhaled	:	Move to fresh air. Treat symptomatically. If symptoms persist, call a physician.
In case of skin contact	:	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before re-use. Get medical attention. Thoroughly clean shoes before reuse.
In case of eye contact	:	Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
If swallowed	:	Get medical advice/ attention. Seek medical advice.
Most important symptoms and effects, both acute and delayed	:	Irritation Pain Redness
Notes to physician	:	Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Carbon dioxide (CO2) Dry chemical Water spray
Unsuitable extinguishing media	:	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards during fire fighting	:	May displace oxygen and cause rapid suffocation. The product will float on water and can be reignited on surface water. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Flash back possible over considerable distance.

Further information	:	In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Flammable gas, may cause flash fire. Cool containers/tanks with water spray. If the product release cannot be shut off safely, allow the product to burn itself out.
Special protective equipment for fire-fighters	:	Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Wear appropriate personal protective equipment. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions	:	Avoid release to the environment.
Methods and materials for containment and cleaning up	:	Evacuate personnel to safe areas. Prevent further leakage or spillage if safe to do so.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	None known.
Advice on safe handling	:	Do not get in eyes. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Wash thoroughly after handling. Sudden Release of Pressure Hazard Use equipment rated for cylinder pressure. Protect container from physical shock. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use. May displace oxygen and cause rapid suffocation.
Conditions for safe storage	:	Keep containers tightly closed in a cool, well-ventilated place. Do not enter areas where used or stored until adequately ventilated. Do not store together with oxidizing and self-igniting products. Protect from sunlight. Keep away from heat and sources of ignition. Store in upright position only. Store locked up.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parame-ters / Permissible concentration	Basis
dimethylamine anhydrous (DMA)	124-40-3	TWA	5 ppm	ACGIH
		STEL	15 ppm	ACGIH
		TWA	10 ppm 18 mg/m3	NIOSH REL
		TWA	10 ppm 18 mg/m3	OSHA Z-1
		TWA	10 ppm 18 mg/m3	OSHA P0

Engineering measures : Ensure adequate ventilation.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Hand protection

Remarks : Wear suitable gloves.

Eye protection : Safety glasses with side-shields
Face-shield
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

Protective measures : Remove respiratory and skin/eye protection only after vapors have been cleared from the area.
Ensure that eye flushing systems and safety showers are located close to the working place.
Use personal protective equipment as required.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : compressed liquefied gas

Color : colorless

Odor : ammoniacal

Odor Threshold : not determined

pH : 11.5

		Concentration: 60 %
Melting point/freezing point	:	-134.0 °F / -92.2 °C
Boiling point/boiling range	:	45 °F / 7 °C
Flash point	:	34 °F / 1 °C Method: closed cup
Evaporation rate	:	not determined
Upper explosion limit / Upper flammability limit	:	14.4 %(V)
Lower explosion limit / Lower flammability limit	:	2.8 %(V)
Vapor pressure	:	1,688 hPa (68 °F / 20 °C)
Relative vapor density	:	2.01
Relative density	:	No data available
Density	:	0.61 g/cm3 (45 °F / 7 °C)
Solubility(ies)		
Water solubility	:	completely soluble
Partition coefficient: n-octanol/water	:	log Pow: -0.274
Autoignition temperature	:	756 °F / 402 °C
Decomposition temperature	:	not determined
Viscosity		
Viscosity, dynamic	:	1.7 mPa,s (59.9 °F / 15.5 °C)
Viscosity, kinematic	:	not determined
Explosive properties	:	Not explosive
Oxidizing properties	:	Not applicable
Surface tension	:	26.34 mN/m, 77 °F / 25 °C
Molecular weight	:	45.08 g/mol

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Stable Hazardous decomposition products formed under fire conditions.
Conditions to avoid	:	Protect container from physical shock. Heat. Exposure to sunlight.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	Carbon dioxide (CO2) Carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if inhaled.

Product:

Acute oral toxicity	:	Remarks: No data available
Acute inhalation toxicity	:	Remarks: No data available
Acute dermal toxicity	:	Remarks: No data available

Components:

dimethylamine anhydrous (DMA):

Acute oral toxicity	:	LD50 Oral (Rat): 1,000 mg/kg Test substance: (as aqueous solution)
Acute inhalation toxicity	:	LC50 (Rat): 5290 ppm Exposure time: 1 h Test atmosphere: gas
Acute dermal toxicity	:	LD50 Dermal (Rabbit): 3,900 mg/kg Test substance: (as aqueous solution)

Skin corrosion/irritation

Causes skin irritation.

Product:

Remarks	:	No data available

Components:

dimethylamine anhydrous (DMA):

Species	:	Rabbit
Exposure time	:	24 h
Result	:	irritating

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Remarks	:	No data available

Components:

dimethylamine anhydrous (DMA):

Species	:	Rabbit
Result	:	Corrosive
Exposure time	:	24 h

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components:

dimethylamine anhydrous (DMA):

Remarks	:	Not applicable

Germ cell mutagenicity

Not classified based on available information.

Components:

dimethylamine anhydrous (DMA):

Germ cell mutagenicity - Assessment	:	Did not show mutagenic effects in animal experiments.

Carcinogenicity

Not classified based on available information.

Components:

dimethylamine anhydrous (DMA):

Carcinogenicity - Assessment	:	Did not show carcinogenic effects in animal experiments.

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is

on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Not classified based on available information.

Components:

dimethylamine anhydrous (DMA):

Reproductive toxicity - Assessment	:	No toxicity to reproduction Did not show teratogenic effects in animal experiments.

STOT-single exposure

May cause respiratory irritation.

Product:

Remarks	:	No data available

Components:

dimethylamine anhydrous (DMA):

Routes of exposure	:	Inhalation
Target Organs	:	Respiratory system
Assessment	:	May cause respiratory irritation.

STOT-repeated exposure

Not classified based on available information.

Product:

Remarks	:	No data available

Repeated dose toxicity

Components:

dimethylamine anhydrous (DMA):

Species	:	Rat
	:	10 ppm
Application Route	:	inhalation (vapor)
Test atmosphere	:	vapor
Target Organs	:	Eyes, Respiratory system, Skin

Aspiration toxicity

Not classified based on available information.

Product:

No aspiration toxicity classification

No aspiration toxicity classification

Experience with human exposure

Product:

Inhalation	:	Remarks: May cause respiratory irritation. Harmful if inhaled.
Skin contact	:	Remarks: Causes skin irritation.
Eye contact	:	Remarks: Causes serious eye damage.
Ingestion	:	Remarks: None known.

Further information

Product:

Remarks	:	None known.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

dimethylamine anhydrous (DMA):

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 118 mg/l Exposure time: 96 h
Toxicity to algae/aquatic plants	:	LC50 (Pseudokirchneriella subcapitata (algae)): 9 mg/l Exposure time: 96 h
Toxicity to fish (Chronic toxicity)	:	NOEC (Oncorhynchus mykiss (rainbow trout)): 20 mg/l Exposure time: 30 d
Toxicity to microorganisms	:	EC10 (Bacteria): 35 mg/l Exposure time: 17 h

Persistence and degradability

Components:

dimethylamine anhydrous (DMA):

Biodegradability	:	Result: Readily biodegradable.

Bioaccumulative potential

Components:

dimethylamine anhydrous (DMA):

Bioaccumulation	:	Bioconcentration factor (BCF): 3.16

Mobility in soil

Components:

dimethylamine anhydrous (DMA):

Distribution among environmental compartments : Koc: 2.4 - 4.7

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with local regulations.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 1032
Proper shipping name	:	Dimethylamine, anhydrous
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	Flammable Gas
Packing instruction (cargo aircraft)	:	200
Packing instruction (passenger aircraft)	:	Not permitted for transport

IMDG-Code

UN number	:	UN 1032
Proper shipping name	:	DIMETHYLAMINE, ANHYDROUS
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	2.1
EmS Code	:	F-D, S-U
Marine pollutant	:	no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 1032
Proper shipping name	:	Dimethylamine, anhydrous

Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	FLAMMABLE GAS
ERG Code	:	118
Marine pollutant	:	no

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
dimethylamine anhydrous (DMA)	124-40-3	1000	1000

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : No SARA Hazards

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

dimethylamine anhydrous (DMA) 124-40-3

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

The ingredients of this product are reported in the following inventories:

TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory
AIIC	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory

PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
NZIoC	:	On the inventory, or in compliance with the inventory
TECI	:	On the inventory, or in compliance with the inventory

TSCA list

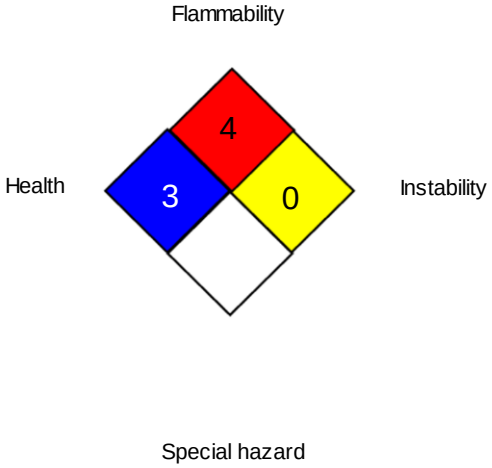
No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

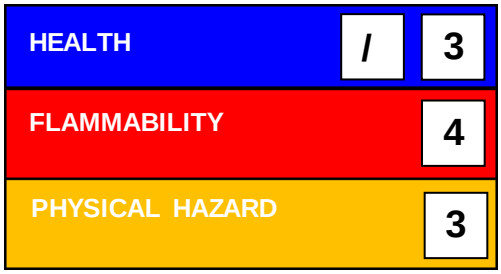
SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA P0 / TWA	:	8-hour time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 08/04/2022

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8